

NOTES ON *AGERATINA* IN MESOAMERICA
(EUPATORIEAE: ASTERACEAE)

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ABSTRACT

A key is provided for the 55 species of *Ageratina* in Mesoamerica. Nine new species are described, *A. alexanderi* *sp. nov.*, *A. capillipes* *sp. nov.*, *A. guatemalensis* *sp. nov.*, *A. herrerae* *sp. nov.*, *A. hirtella* *sp. nov.*, *A. motozintlensis* *sp. nov.*, *A. subcoriacea* *sp. nov.*, *A. thomasi* *sp. nov.*, and *A. valerioi* *sp. nov.* In addition, two new combinations are made: *A. huehueteca* *comb. nov.* and *A. pichinchensis* (H.B.K.) King & H. Robins. var. *bustamenta* *comb. nov.*

KEY WORDS: Asteraceae, Eupatorieae, *Ageratina*, Mesoamerica, key.

A study of the genus *Ageratina* for the *Flora Mesoamericana* has shown the need for the following nine new species descriptions and two new combinations. Also, a preliminary English key is provided for the Mesoamerican species of *Ageratina*.

Ageratina huehueteca (Standley & Steyerf.) R.M. King & H. Robinson, *comb. nov.* BASIONYM: *Eupatorium huehuetecum* Standley & Steyerf., Publ. Field Mus., Bot. 22:304. 1940.

The species was regarded as a probable reduced form of *Ageratina bustamenta* (DC.) King & H. Robins. in the listing of species for the generic treatment of the Eupatorieae (King & Robinson 1987).

Ageratina pichinchensis (H.B.K.) King & H. Robins. var. *bustamenta* (DC.) R.M. King & H. Robinson, *comb. nov.* BASIONYM: *Eupatorium bustamentum* DC., *Prodr.* 5:168. 1836.

The Mexican and Mesoamerican variety seems to differ from the typical Andean material of *Ageratina pichinchensis*, only by the somewhat more obtuse leaf apices.

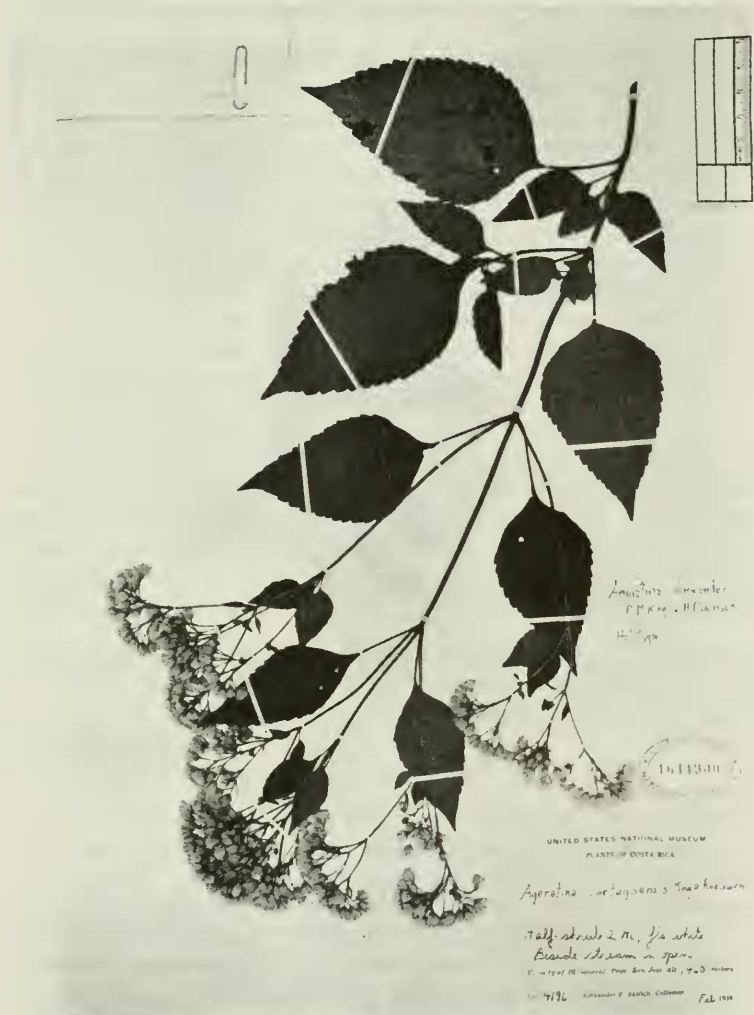
Ageratina alexanderi R.M. King & H. Robinson, *sp. nov.* (Figure 1).
HOLOTYPE: COSTA RICA. San José, El General, *Skutch 4196* (US).

Plantae suffrutescentes ad 2 m altae. Caules et petioli dense rubro-puberuli. Folia opposita, petiolis plerumque 2-4 cm longis; laminae herbaceae ovatae plerumque 6-10 cm longae et 3-6 cm latae propter tertiam basilarem latissimae base obtuse rotundatae vel breviter acutae parce acuminatae margine 10-20 breviter obtuse serratae apice breviter acuminatae supra uniformiter sparse appresse puberulae subtus in nervis densius puberulae non glanduliferae 2-7 mm supra basem trinervatae, nervis a ca. 25-30° divergentibus. Inflorescentiae in caulibus foliosis terminales late corymbose cymosae, ramosis inferioribus alternis, bracteis inferioribus parve foliosis, ramulosis dense puberulis. Capitula 5-6 mm alta; bractee involucri 15-17 eximbricatae 4-5 mm longae et 0.8-1.0 mm latae apice leniter scariosae non costatae erose breviter acutae extus puberulae. Flores ca. 25; corollae albae ca. 2.7 mm longae, tubis ca. 1.8 mm longis, faucibus ca. 1.5 mm longis, lobis ca. 0.4 mm longis extus puberulis. Achaenia ca. 2 mm longa superne et in costis setulifera; setae pappi mediocriter deciduae ca. 3 mm longae.

Material of the species was previously included among the paratypes of *Ageratina cartagoensis* King & H. Robins., but the latter species differs by its more brownish, coarsely pilosulous stems, its less widely diverging trinervation, and by the more narrowly pointed and nonerose apices of the involucre bracts.

Ageratina capillipes R.M. King & H. Robinson, *sp. nov.* (Figure 2). HOLOTYPE: GUATEMALA. Chimaltenango: road to Iximche Ruins, Tecpán, herb common on banks of Iximche Creek, alt. 2500 m. Flowers white. Jan 12-23, 1966, *A. Molina R., W.C. Burger & B. Wallenta 16080* (US). PARATYPES: MÉXICO. Chiapas: Along road from Motozintla de Mendoza to Siltepec via El Porvenir, 14.1 miles NW of Motozintla; cloud forest on steep slopes facing the Atlantic; primary forest. 1 m; flowers white. 11 Feb 1979, *T.B. Croat 47287* (MO, US).

Plantae herbaceae erectae tenues ad 1 m altae. Caules brunnei subglabri sparse appresse puberuli. Folia opposita, petiolis plerumque 1-2 cm longis; laminae oblongo-ellipticae ad ovatae tenuiter herbaceae plerumque 4-7 cm longae et 2.0-3.5 cm latae propter



Ageratina alexanderi R. M. King & H. Robinson, holotype, United States National Herbarium (US). Photos by Victor E. Krantz, Staff Photographer, National Museum of Natural History.

Figure 1. *Ageratina alexanderi* R.M. King & H. Robinson, holotype, United States National Herbarium (US). Photos by Victor E. Krantz, Staff Photographer, National Museum of Natural History.

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Ageratina capillipes R.M. King & H. Robinson
Holotype

2576649
NAT. HERBARIUM

GUATEMALA
16090
Zooteca Agricola, Financiamiento
(through National History Museum)
Eupatoriaceae aff. *minarum* Standl. & S. Wats.
Fls. white, herb common on banks of
Iximché Creek, road to Iximché Ruins,
Tzacán,
Department: Chimaltenango
Alt. 2500 m. AS
Jan. 1988, 1988
Authors: Marko R. Widmer, G. Burger and Bruce Webster

Ageratina capillipes R. M. King & H. Robinson, holotype, United States National Herbarium.(US).

Figure 2. *Ageratina capillipes* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

1/3-2/5 latissimae base breviter acutae margine 10-15 breviter univel bi-crenato-serrulatae apice mediocriter acutae supra et subtus sparse puberulae in nervis vix densius puberulae non glanduliferae 2-5 mm supra basem trinervatae, nervis secundariis a costis 15-20° divergentibus a marginis basilaribus mediocriter divergentibus. Inflorescentiae in caulibus foliosis terminales, ramulosis 5-9 mm longis minute subappresse puberulis. Capitula ca. 7 mm alta; bracteae involucri ca. 10-14 eximbricatae ca. 4-5 mm longae et 0.4-0.6 mm latae apice anguste acutae subscariosae extus glabrae vel puberulae. Flores 12-22; corollae albae ca. 4.5 mm longae, tubis ca. 1.5 mm longis, faucibus ca. 2 mm longis, lobis ca. 1 mm longis pilosulis. Achaenia 2.0-2.2 mm longa fusiformia dense setulifera; setae pappi facile deciduae ca. 3 mm longae.

The species has the tenuous habit and involucrial form of *Ageratina helenae* King & H. Robins. and *A. molinae* King & H. Robins., but the leaf blades are more narrowly ovate, the trinervation is distinctly above the base and less broadly spreading, and the throat of the corolla is distinctly longer than the basal tube. Material of the species was originally distributed by the Field Museum under the name *Eupatorium* aff. *minarum* Standl. & L.O. Williams.

Ageratina guatemalensis R.M. King & H. Robinson, *sp. nov.* (Figure 3).
HOLOTYPE: GUATEMALA. Quezaltenango: Slopes of Volcán de Santa María, above Palojunoj, alt. 2400-3768 m. March 6, 1939, *P.C. Standley 67608* (US).

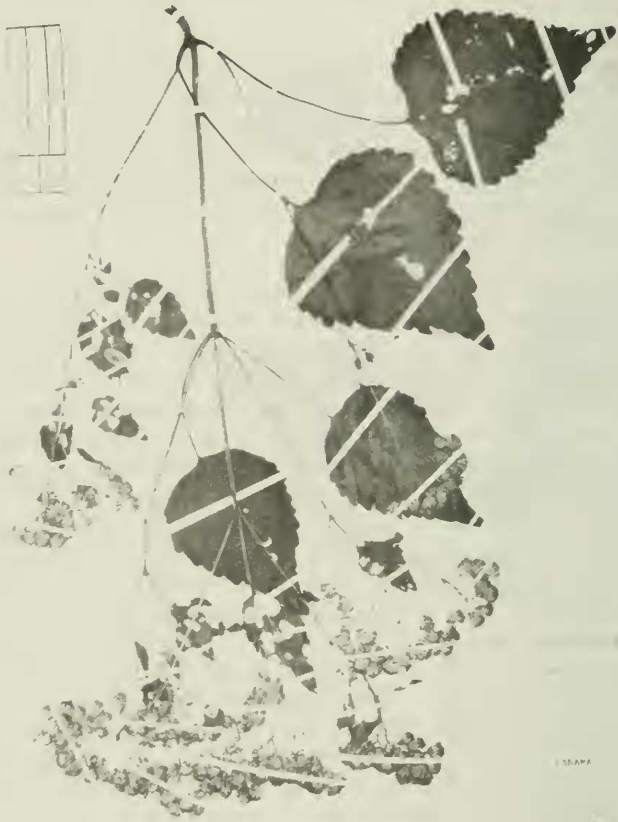
Plantae suffrutescens erectae ad 1.5 m altae. Caules atrescentiter rubro-brunnei sparse appresse puberuli glabrescentes. Folia opposita, petiolis 1-3 cm longis; laminae herbaceae ovatae 3-7 cm longae et 1.5-3.5 cm latae propter quartam basilarem latissimae base rotundatae vel subtruncatae margine vadosae 10-20 serratae apice acutae vel breviter argute acuminatae supra inter nervum regulariter pilosae in nervis dense puberulae subtus leniter pallidiores solum in nervis pilosae non glanduliferae in acuminis basilaribus trinervatae, nervis secundariis a ca. 25° divergentibus. Inflorescentiae in caulibus foliosis terminales, ramosis dense corymbosis 2-3-stratosis, ramulis 3-9 mm longis dense puberulis. Capitula 8-9 mm alta; bracteae involucri ca. 13 eximbricatae anguste lanceolatae plerumque purpurascens ca. 7 mm longae et 0.8-1.0 mm latae apice anguste acutae extus dense purpureo-puberulae. Flores ca. 17; corollae albae ca. 5.3 mm longae, tubis ca. 2 mm longis, faucibus ca. 2.5 mm longis, lobis ca. 0.8 mm longis extus rubropilosulis. Achaenia ca. 2.2 mm longa fusiformia in costis et inter

costas valde setulifera; setae pappi facile deciduae 4.5-5.0 mm longae.

The type specimen was originally named *Eupatorium skutchii* B.L. Robins., but the latter is a synonym of *Ageratina rivalis* (Regel) King & H. Robins., usually having black lenticular spots on the stems, broader leaf blades, less evident purplish pubescence in the heads, and setulae on the achenes restricted to the ribs. The new species has rather large heads compared to other densely corymbose species, involucrel bracts with narrow tips, and very coarse setulae on the sides and ribs of the achene.

Ageratina herrerae R.M. King & H. Robinson, *sp. nov.* (Figure 4). TYPE: PANAMÁ. Bocas del Toro: Cordillera de Talamanca, headwaters of the Río Colubre, 6 airline km NW of the peak of Cerro Echandi on the Costa Rican-Panamanian international border; 9° 05' N, 82° 50' 30" W; elev. 2450-2600 m. Mixed *Quercus-Podocarpus-Magnolia-Symplocus-laurel* forest with *Chusquea* understory. Along river bank. Semi-shrub 1 m tall; flowers fragrant, the florets white. 2-3 Mar 1984. *G. Davidse, L.D. Gómez, G. Herrera C., D. Chacón, I. & A. Chacón 25178* (HOLOTYPE: US; Isotype: MO). PARATYPES: PANAMÁ. Bocas del Toro: Cordillera de Talamanca, 2 airline km NW of the peak of Cerro Echandi on the Costa Rican-Panamanian international border; 9° 03' N, 82° 50' W; elev. 2850 m. Mixed *Quercus-Podocarpus* cloud forest in narrow canyon. Along stream. Shrub 75 cm tall; florets white with a pink tinge. 29 Feb 1984, *G. Davidse, L.D. Gómez, G. Herrera C., R. Chacón, I. & A. Chacón 25095* (MO, US); SE slopes of Cerro Echandi, between Jilguero & Danta Camps. 2600-2800 m. March 1, 1984. *L.D. Gómez, I. Chacón, G. Davidse, & G. Herrera 22279* (MO, US). Chiriquí: Path above Cerro Punta to Boquete, 8° 50' N, 82° 30' W. ca. 2500 m. Moist forest. Heads white. 16 March 1983, *C. Hamilton & H. Stockwell 3373* (MO, US).

Plantae suffruticosae ad 1 m altae. Caules pallide brunnescentes dense puberuli vel pilosuli. Folia opposita, petiolis plerumque 3-8 cm longis; laminae herbaceae ovatae 6-10 cm longae et 3.5-10.0 cm latae ad tertiam basilarem latissimae base vix obtusae vel subtruncatae vel late cordatae margine valde 10-20 saepe duplo crenato-serratae apice breviter late acuminatae supra et subtus inter nervis minute mediocriter puberulae in nervis dense puberulae non glanduliferae 2-5 mm supra basem trinervatae, nervis secundariis 35° divergentibus. Inflorescentiae in caulibus foliosis terminales dense late corymbosae, ramulosis dense pilosulis vel hirtellis. Capitula ca. 6 mm alta; bracteae involucri ca. 15 eximbricatae ca. 5



Ageratina herrerae R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 4. *Ageratina herrerae* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

mm longae et 0.8-1.0 mm latae apice anguste acutae vel attenuatae herbaceae extus puberulae vel pilosulae. Flores ca. 25; corollae albae ca. 3.5 mm longae, tubis ca. 1.5 mm longae, faucibus ca. 1.5 mm longis, lobis ca. 0.4 mm longis extus pilosulis. Achaenia 1.8-2.0 mm longa superne leniter constricta superne in costis sparse scabrida; setae pappi facile deciduae ca. 3-4 mm longae.

Material of the new species was first determined as *Ageratina bustamenta* (DC.) King & H. Robins., the Central American variant of *Ageratina pichinchensis*, but the two have only superficial similarities. The new species has puberulous stems and large coarsely crenate leaf blades, and it belongs to the related group in Panamá and Costa Rica, having minutely scabrid rather than setuliferous achenes.

Ageratina hirtella R.M. King & H. Robinson, *sp. nov.* (Figure 5). HOLOTYPE: COSTA RICA. San José: along route 2, ca. 25 km S of Cartago, elev. 5700 ft. 1/2 m tall, partial shade, flowers white. June 11, 1974. *R.M. King 6755* (US). PARATYPES: COSTA RICA. San José: along route 2, 17 km generally SE of Empalme, elev. ca. 8100 ft. Shrub to 1/2 m tall, open area, flowers white. June 11, 1974, *R.M. King 6761* (US). Puntarenas: Foothills of the Cordillera de Talamanca, around Tres Colinas; 9° 07' N, 83° 04' W; elev. 1800-1850 m. Mixed forest with *Quercus*, *Magnolia* and *Cornus* common. Roadside; plants to 75 cm; florets white. 20 March 1984. *G. Davidse, G. Herrera Ch. & R.H. Warner 25629* (MO, US).

Plantae herbaceae erectae ad 75 cm altae. Caules pallide brunnescentes dense hirsutuli. Folia opposita, petiolis plerumque 1-2 cm longis; laminae herbaceae ovatae plerumque 4-5 cm longae et 2.5-3.5 cm latae propter tertiam basilarem latissimae base late rotundatae margine 15-20 breviter argute serrulatae apice distincte argute breviter acuminatae supra et subtus mediocriter puberulae subtus in nervis dense puberulae non glanduliferae 2-3 mm supra basem ascendentiter trinervatae, nervis secundariis a ca. 20° divergentibus. Inflorescentiae in caulibus foliosis terminales laxae thysoideae, ramis dense corymbosis, ramulosis dense pilosulis. Capitula ca. 5-6 mm alta; bractee involucri ca. 16-18 eximbricatae ca. 5 mm longae et 0.8-1.0 mm latae apice subherbaceae acutae vel anguste acutae extus dense puberulae. Flores 29-40; corollae albae ca. 3.5 mm longae, tubis ca. 1.5 mm longis, faucibus ca. 1.5 mm longis, lobis 0.5-0.7 mm longis extus pilosulis. Achaenia ca. 2 mm longa fusiformia in costis et superne setulifera; setae pappi facile deciduae 2.5-3.5 mm longae.



Ageratina hirtella R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 5. *Ageratina hirtella* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

The new species has a distinctive ovate leaf blade with sharp serrations and a distinct apical acumination. The inflorescence is also rather characteristically thyrsoid. The specimens were initially determined as *Ageratina bustamenta*, but the leaf tips are much more pointed and the involucral bracts are narrowly acute. The species may be closely related to *A. costaricensis* King & H. Robins., but the latter is a generally smaller plant with puberulous stems, the veins of the trinervation straighter at the base, the inflorescence less dense, and the achenes with setulae denser on the ribs.

Ageratina motozintlensis R.M. King & H. Robinson, *sp. nov.* (Figure 6).

TYPE: MÉXICO. Chiapas: Municipio of Motozintla de Mendoza. Steep slope with *Pinus* and *Quercus* near summit of Cerro Moxotal, elev. 2750 m. 24 Nov 1981, D.E. Breedlove & B. Bartholomew 55832 (HOLOTYPE: US; Isotype: CAS).

Plantae fruticosae ad 0.8 m altae. Caules brunnescentes; caules petioli laminae foliorum rami inflorescentis et bracteae involucri mediocriter vel dense rubre stipitate glanduliferae. Folia opposita, petiolis 1.0-1.3 cm longis; laminae herbaceae late ovatae plerumque 2.0-2.4 cm longae et 1.5-2.0 cm latae propter tertiam basilarem latissimae base leniter subcordatae margine breviter ca. 10 crenatoserratae apice breves acutae vel vix acuminatae supra regulariter glandulo-piliferae subtus leniter pallidiores in nervis densius glanduliferae non glandulo-punctatae ad basem trinervatae, nervis secundariis ad angulos 40-50° divergentes. Inflorescentiae in caulibus foliosis terminales, ramulis plerumque 9-13 mm longis. Capitula ca. 8 mm alta; bracteae involucri ca. 20 eximbricatae plerumque 5-6 mm longae et ca. 0.9 mm latae apice anguste acutae rubescentes in bracteis interioribus plus scariosae. Flores ca. 30; corollae albae ca. 4.5 mm longae, tubis 1.5 mm longis, faucibus ca. 2 mm longis, lobis 1.0-1.2 mm longis extus sparse puberulis. Achaenia ca. 2.2 mm longa fusiformia in costis dense setulifera inter costas subglabra; setae pappi facile deciduae pallide lavandulae plerumque ca. 4 mm longae.

The new species resembles *Ageratina rhyodes* (B.L. Robins.) King & H. Robins., and may have its closest relationship to that Andean species. Both show the indument of reddish stipitate glands on the stems, leaves, inflorescence branches and involucre. The Andean species is most distinct in its strongly cordate leaf bases with a central acumination, and by the trinervation being basal and marginal in that basal acumination.



Ageratina motozintlensis R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 6. *Ageratina motozintlensis* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

Ageratina subcoriacea R.M. King & H. Robinson, *sp. nov.* (Figure 7).
HOLOTYPE: MÉXICO. Chiapas: Municipio of La Trinitaria. Slope with *Liquidambar*, *Quercus* and *Pinus* at the Lago of Monte Bello, 25 miles east of La Trinitaria, elev. 5100 ft. Flowers white, 3 feet tall. 13 April 1965, D.E. Breedlove 9741 (DS).

Plantae fruticosae erectae ad 3 m altae. Caules pallide brunnescentes subcarnosi sparse minute appresse pilosi. Folia opposita, petiolis 2-6 cm longis; laminae subcoriaceae late ovatae plerumque 5.5-10.5 cm longae et 3-8 cm latae propter tertiam basilarem latissimae base late obtusae vel subtruncatae margine valde serratae ad duplo-serratae apice breviter acuminatae supra sparse minute puberulae subtus non glandulo-punctatae in axillis nervis subtomentosae 5-10 mm supra basem trinervatae, nervis secundariis a 30-40° divergentibus, nervulis subtus reticulatis atrescentibus non prominulis. Inflorescentiae caulibus foliosis terminales dense late corymbosae, ramulis puberulis non stipitate glanduliferae. Capitula ca. 9-10 mm alta; bractae involucri 20-25 eximbricatae oblongo-lanceolatae 8-9 mm longae et 0.5 mm latae apice longe attenuatae extus puberulae. Flores 30-50; corollae albae, ca. 5.3 mm longae, tubis 2.0-2.5 mm longis, faucibus ca. 2.2 mm longis, lobis ca. 0.8 mm longis et ca. 0.4 mm latis extus non pilosis. Achaeia ca. 3.5 mm longa base leniter angustiora in costis et superne plerumque breviter setulifera non glandulifera; setae pappi medicriter deciduae ca. 4.5 mm longae.

The new species is a member of the subgenus *Neogreenella* in the group containing *Ageratina maretiana* (DC.) King & H. Robins., but it differs from most species in the group by having setulae rather than glands on the achenes. The species seems most closely related to *Ageratina ernstii* King & H. Robins. from Oaxaca, but the pedicels and involucre lack stipitate glands, the leaves are more coriaceous, and the inflorescences are more compact.

Ageratina thomasii R.M. King & H. Robinson, *sp. nov.* (Figure 8). TYPE: MÉXICO. Chiapas: Along road between Motozintla de Mendoza and Siltepec via El Porvenir, 13 miles NW of Motozintla, elev. 1580 m. Less than 1 m; flowers white. 11 Feb 1979, Thomas B. Croat 47279 (HOLOTYPE: US; Isotype: MO).

Plantae erectae parve fruticosae ad 0.5 m altae. Caules primarii pallide brunnescentes subcarnosi glabri, ramis sparse puberulis. Folia opposita, petiolis plerumque 3-8 mm longis; laminae ovatae 1.5-3.5 cm longae et 1-2 cm latae propter tertiam basilarem latissimae base obtusae margine 3-7 obtuse serratae apice



Ageratina subcoriacea R.M. King & H. Robinson, holotype, United States National Herbarium (US)

Plants of Chiapas, Mexico

Same with *Lycopodium*, *Saxifraga* and *Fragaria* at the Lago of Monte Bollo, 7.5 miles east of La Trinitaria, municipio of La Trinitaria.

Elevation 3100 feet

D. F. Breedlow

13 April 1965

Ageratina subcoriacea R. M. King & H. Robinson, holotype, United States National Herbarium (US)

Figure 7. *Ageratina subcoriacea* R.M. King & H. Robinson, holotype, United States National Herbarium (US).



Ageratina thomasi R.M. King & H. Robinson
 1954

UNITED STATES

NO. 1000 (S. E. HOWELL WHITE)

2956619

NATIONAL HERBARIUM

42,79

MISSOURI BOTANICAL GARDEN HERBARIUM

Ageratina thomasi R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 8. *Ageratina thomasi* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

breviter acutae supra et subtus subglabrae in nervis majoribus et margine sparse minute puberulae non glandulo-punctatae 1-6 mm supra basem trinervatae, nervis secundariis ad angulos ca. 30° divergentibus, nervulis non distincte reticulatis. Inflorescentiae in ramis terminales corymbosae; corymbis parvis 10-20 capitatis, ramulis puberulis non glanduliferis. Capitula ca. 6 mm alta; bracteae involucri 12-16 eximbricatae oblongo-ellipticae ca. 3.5 mm longae et ca. 0.8 mm latae apice acutae extus subglabrae. Flores ca. 20; corollae ca. 3.8 mm longae, tubis 1.5 mm longis, faucibus late campanulatis ca. 1.5 mm longis, lobis ca. 0.8 mm longis et ca. 0.4-0.5 mm latis extus non pilosis. Achaenia ca. 1.5 mm longa base angustiora in costis et superne breviter setulifera; setae pappi 2-3 mm longae mediocriter deciduae.

The new species is a member of subgenus *Neogreenella* with some resemblance to the rather scandent *Ageratina ovilla* (Standl. & Steyerf.) King & H. Robins., but there is no indication of a scandent habit. Also, the lateral branches spread at more nearly 45° rather than at right angles. The involucre bracts are also shorter and are greatly exceeded by the florets in the mature heads.

Ageratina valerioi R.M. King & H. Robinson, *sp. nov.* (Figure 9). HOLOTYPE: COSTA RICA. Cartago: Along the Río Reventado, north of Cartago, alt. 1460-1650 m. Moist thicket; erect bushy herb 3 ft.; flowers white. Feb. 26, 1926, *P.C. Standley & J. Valerio 49493* (US).

Plantae herbaceae erectae ad 0.8 m altae. Caules pallidi vel mediocriter brunnescentes hirsuti. Folia opposita, petiolis 1.5-3.5 cm longis; laminae membranaceae ovatae plerumque 6-10 cm longae et 3-6 cm latae propter tertiam basilarem latissimae base rotundatae vel breviter obtusae et leniter acuminatae margine supra tertiam basilarem breviter 10-20 crenato-serrulatae apice breviter late acuminatae supra et subtus minute puberulae non glanduliferae in nervis densius puberulae 2-5 mm supra basem trinervatae, nervis secundariis ad 20-25° divergentibus. Inflorescentiae in caulibus foliosis terminales dense pyramidaliter paniculatae, ramulis dense puberulis vel hispidulis. Capitula ca. 5 mm alta; bracteae involucri ca. 13 eximbricatae 3.5-4.0 mm longae et 0.6-0.8 mm latae ad 7/8 costatae apice obtuse erosae tenuiter scariosae extus puberulae. Flores 25-30; corollae albae ca. 3.7 mm longae; tubis ca. 1.5 mm longis, faucibus ca. 1.5 mm longis, lobis ca. 0.7 mm longis extus pilosulis. Achaenia ca. 1.5 mm longa fusiformia in costis superne dense setulifera et inter costas superne sparse setulifera; setae pappi facile deciduae ca. 3 mm longae.

The species is one of those in Costa Rica having elliptic-ovate leaves with strongly ascending lateral veins of the trinervation. The type specimen of the new species was cited as a paratype of *Ageratina cartagoensis* (King & Robinson 1972) but the latter as presently defined differs by the coarse curved pilosity of the stems and the narrowly acute tips of the involucre bracts. The new species is also similar to *A. alexanderi*, described above, but the latter has puberulous stems, more ovate leaf blades, and a more broadly corymbose inflorescence.

Key to the species of *Ageratina* in Mesoamerica

1. Corollas with lobes as long as throat; pappus rather persistent, spreading with age; lower leaf surface much paler than upper, membranaceous, loosely attached except at major veins.5. *A. anisochroma*
1. Corolla throats longer than lobes; pappus erect or deciduous with age; lower leaf surface firmly attached to most veins of leaf.
 2. Leaf blades with no strongly ascending veins diverging at less than 45° from midrib.
 3. Leaves with numerous glandular punctations.
 4. Involucre bracts with numerous stipitate glands; achenes with small glandular dots; leaf blades with no basal auricles. ... 12. *A. caeciliae*
 4. Involucre bracts without stipitate glands; achenes with no glands, with only setulae; leaf blades usually with lobes and strongly recurved margins at bases.29. *A. ligustrina*
 3. Leaves without glandular punctations.
 5. Leaves sessile; stems glabrous; florets ca. 6 in a head. 17. *A. contigua*
 5. Leaves petiolate; stems puberulous; florets 20-30 in a head.
 6. Heads with 20-22 florets. 48. *A. subglabra*
 6. Heads with 28-30 florets. 52. *A. tonduzii*
 2. Leaf blades with some veins in lower third ascending at less than 45° divergence from midrib, often strongly trinervate; leaf blades usually widest distinctly below middle.
 7. Peduncles of inflorescence and also often involucre bracts with numerous, distinctly stipitate glands.
 8. Achenes glabrous or glanduliferous.

9. Achenes glabrous; leaves trinervate from top of petiole; heads 4-5 mm high; corollas with abruptly narrowed basal tube. 1. *A. adenophora*
9. Achenes glanduliferous; leaves usually trinervate from point above base of blade; heads 7-12 mm high; corollas without abruptly narrowed basal tube. 39. *A. pringlei*
8. Achenes setuliferous or scabrid, without glands.
10. Leaves in basal rosette. 10. *A. bellidifolia*
10. Leaves cauline.
7. Peduncles and involucre bracts without stipitate glands, sometimes with sessile or nearly sessile glandular dots.
11. Petioles less than 1.5 cm long; leaf blades usually less than 5 cm long, trinervate from base of blade.
12. Stems, leaves, and involucre with numerous, reddish, stipitate glands; involucre with ca. 20 bracts. 33. *A. motozintlensis*
12. Hairs of stems, leaves, and involucre not reddish; involucre with 13-16 bracts.
13. Leaves subsessile, the petioles 1-2 mm long. .16. *A. chiriquensis*
13. Leaves with petioles 0.7-1.3 cm long. 28. *A. kupperi*
11. Petioles 1-7 cm long; leaf blades over 5 cm long, trinervate from above base of blade.
14. Leaf blades deltate, veinlets not forming a minute dark reticulum. 55. *A. zunilana*
14. Leaf blades ovate, veinlets as seen from below forming a minute dark reticulum.
15. Leaves and stems densely velutinous. 54. *A. vernalis*
15. Leaves and stems glabrous to minutely puberulous.
16. Corollas without a tuft of hairs on lobes, and without a sharply delimited basal tube. 26. *A. intibucensis*
16. Corollas with apical tuft of hairs on lobes, with sharply delimited slender basal tube. 27. *A. izioclodon*
17. Scrambling shrubs with branches of inflorescence spreading at 90° angles; heads with 8-10 florets.
18. Leaves serrate, secondary veins parallel to basal margin, veinlets prominulous on both surfaces; achenes glabrous or minimally scabrid above. 41. *A. reticulifera*
18. Leaves subentire, secondary veins divergent from basal margin, veinlets not prominulous; achenes hispid above. 35. *A. ovilla*

17. Erect herbs, shrubs, or trees with ascending branches in inflorescence; heads with 12 or more florets.
19. Achenes glabrous or glanduliferous, essentially without setulae or scabrae.
20. Achenes glanduliferous; stems, young leaves, and axils of large secondary veins on leaf undersurface with appressed, arachnoid tomentum.30. *A. mairetiana*
20. Achene glabrous, without glands.
21. Leaf blades elliptical with long-acuminate bases and tips; secondary veins strongly ascending in 3-4 pairs, heads ca. 6 mm high, with ca. 13 involucre bracts. 11. *A. burgeri*
21. Leaf blades ovate with short-acuminate bases and tips; triner- vate from near base; heads ca. 4 mm high, with ca. 20 involucre bracts. 31. *A. malacolepis*
19. Achenes distinctly setuliferous or scabrid on ribs or upper surfaces.
22. Corollas with few or no hairs on outer surfaces of lobes; leaf surface sometimes with obvious glandular dots.
23. Leaves without glandular dots below; stem and leaf surfaces glabrous to subglabrous or with sparse, appressed pubescence.
24. Leaf blades 1.5-3.5 cm long, 1-2 cm wide, undersurface with- out a close reticulum of veinlets; inflorescences small with 10- 20 heads; heads ca. 6 mm high, with 12-16 involucre bracts. 50. *A. thomasii*
24. Leaf blades 3.5-7.0 cm long, mostly 2-6 cm wide, under- surface with a close reticulum of veinlets; inflorescences large with 50 or more heads; heads 8-10 mm high, with 18-25 in- volucre bracts.
25. Veinlets of leaf blades forming a prominulous, close reticu- lum on both surfaces; leaf margins subserrulate; heads with ca. 17 florets. 43. *A. salvadorensis*
25. Veinlets of leaf blades with the reticulum not prominu- lous; leaf margins serrate; heads with 30-50 florets.47. *A. subcoriacea*
23. Leaves with numerous glandular dots below; stems and leaf surfaces with distinct, usually erect pubescence.
26. Leaf base deeply cordate, trinervate from base of blade. 37. *A. petiolaris*
26. Leaf base obtuse to scarcely cordate, trinervate from above base of blade.

27. Leaf tips acute to short-acuminate; stems hirsute to tomentose, often with reddish hairs. 49. *A. subinclusa*
27. Leaf tips rounded; stems grayish or yellowish pubescent. 51. *A. tomentella*
22. Corollas with numerous long hairs on outer surfaces of lobes; surfaces of leaf blades with only obscure glandular pits or without glands.
28. Heads with usually 20-24 involucre bracts 1-2 mm wide, with 50-125 florets; plants herbaceous, mostly 30-80 cm tall, often with enlarged basal leaves; inflorescence scapose or subscapose.
29. Stems distinctly reddish; heads 6-9 mm long; leaf margins with 4-12 blunt or coarse crenations or serrations; achenes 2.2-2.7 mm long; involucre puberulous, peduncles densely puberulous to pilosulous. 40. *A. prunellaefolia*
29. Stems brownish with at most a reddish tinge; heads 4-6 mm long; leaf margins with 10-20 crenations or blunt serrations; achenes ca. 1.5 mm long; involucre glabrous; peduncles glabrous to sparsely puberulous.
30. Inflorescence laxly branching with few heads per branch, peduncles to 7.5 cm long; leaf blades ovate to orbicular, usually cuneate to truncate at base; leaves confined to lower 1/4 of plants. 34. *A. muelleri*
30. Inflorescence moderately lax with numerous heads, peduncles short; leaf blades cordate; reduced leaves extending well up stem into inflorescence. 4. *A. anchistea*
28. Heads with usually 10-16 involucre bracts 0.3-1.0 mm wide, with rarely more than 45 florets; plants subshrubs to shrubs without evident basal leaves; inflorescence terminal on leafy stems.
31. Corollas with numerous hairs inside at bases of lobes. 46. *A. subcordata*
31. Corollas without evident hairs inside at bases of lobes.
32. Involucre bracts with small sessile glands on outer surface, sometimes viscid, without nonglandular hairs except at margin. 27. *A. izioclodon*
32. Involucre bracts without glands, with few to many nonglandular hairs.
33. Achenes with only scabrae or short spicules that are 1-3 times as long as wide, not longer than space between them; plants restricted to Costa Rica and Panamá.

34. Bases of leaf blades acute, strongest secondary veins located well above base near basal 1/3 of blade.
35. Stems puberulous; leaf blades minutely puberulous, areoles without internal vesicular inclusions. 3. *A. allenii*
35. Stems hirsute; leaf blades pilose, areoles with internal vesicular inclusions. 9. *A. barbensis*
34. Bases of leaf blades rounded to broadly obtuse or subcordate, strongest secondary veins arising within 5 mm of blade base.
36. Leaf blades broadest near basal 1/4, tips narrowly acuminate; heads ca. 4 mm long. ... 19. *A. croatii*
36. Leaf blades broadest near basal 1/3, tips short acute to short acuminate; heads ca. 6 mm long.
37. Stems and leaves antrorsely or appressed puberulous; throats of corollas ca. 1.5 mm long, longer than wide; leaf margins coarsely crenate-serrate. 23. *A. herrerae*
37. Stems and leaves hispid with erect pubescence; throats of corollas ca. 1 mm long, almost as wide as long; leaf margins minutely serrulate or crenulate. 45. *A. standleyi*
33. Achenes with long setulae on ribs or upper surfaces, setulae many times as long as wide, distinctly longer than distances between them; species from all parts of Mesoamerica.
38. Tips of involucre bracts obtuse to shortly acute, often broadly scarious and erose.
39. Stems hirsute or hispid with erect hairs.
40. Base of leaf blade rounded to slightly cordate, blade herbaceous in texture. .38. *A. pichinchensis* var. *bustamenta*
40. Base of leaf blade acute with short acumination, blade membranaceous in texture. 53. *A. valerioi*
39. Stems puberulous with short curved or appressed hairs.
41. Stems reddish or reddish tinged.
42. Leaf margins with 5-10 blunt serrations, blades usually 2-5 cm long. 44. *A. schaffneri*

42. Leaf margins with 10-20 sharp, single or double serrations, blades usually 4-9 cm long. 36. *A. pazcuarensis*
41. Stems brownish, not reddish.
43. Leaf blades oblong ovate to nearly elliptical, basal margins subparallel to basal secondary veins; heads ca. 4 mm long. 25. *A. huehueteca*
43. Leaf blades ovate to broadly ovate, basal margins strongly divergent from secondary veins in trinervation; heads 5-7 mm long.
44. Base of trinervation at margin of large distinct basal acumination of leaf blade, blade broadest in basal 1/5-1/4; achenes with setulae only slightly denser on ribs. 6. *A. atrocordata*
44. Base of trinervation arising from 1-7 mm above base of leaf blade, blade widest near basal 1/4-1/3; achenes with setulae mostly on ribs, often sparse or lacking between.
45. Stems without black lenticular spots; base of leaf blade subacute to acute; setulae not densely pectinate on ribs of achene; leaf margins with 10-20 broad teeth. 2. *A. alexanderi*
45. Stems usually with obvious black lenticular spots; base of leaf blade often subtruncate to cordate; setulae densely pectinate on ribs of achene; margins of most leaves with 20-30 close teeth. 42. *A. rivalis*
38. Tips of involucre bracts mostly narrowly acute to attenuate.
46. Achenes with setulae mostly or entirely restricted to ribs, sometimes dense.
47. Secondary veins in trinervation of leaves divergent from basal margin, at ca. 20° angle from midvein: stems coarsely curved pilosulous. 15. *A. cartagoensis*
47. Secondary veins in trinervation of leaves nearly parallel to basal margin, at ca. 30-35° angle from midvein; stems with spreading hairs.

48. Stems and leaves with reddish hairs; internodes 1-3 cm long; corolla lobes with hairs dimorphic, some hairs ending in a series of short broad cells.20. *A. diversipila*
48. Stems and leaves with whitish or sordid hairs, not reddish; internodes mostly 6-9 cm long; corolla lobes with all hairs slender tipped.7. *A. austin-smithii*
46. Achenes with setulae rather evenly distributed on ribs and upper surfaces.
49. Stems densely hirtellous or hirsutulous with erect hairs.
50. Leaf blades mostly 4-5 cm long, trinervate from 1-3 mm above base, margins with short sharp teeth; hairs of stem pale. 24. *A. hirtella*
50. Leaf blades mostly 8-10 cm long, trinervate from 7-15 mm above base, margins with numerous blunt serrations; hairs of stems reddish.8. *A. badia*
49. Stems puberulous with curved or appressed hairs.
51. Leaf blades over 3/4 as wide as long, secondary veins at base of trinervation diverging from midvein at 30-35° angle at base; heads 4-5 mm long.
52. Corolla tube 1.5-2.0 mm long, distinctly longer than the limb; trinervation of leaf basal, at margin in basal acumination. 32. *A. molinae*
52. Corolla tube 1.0-1.5 mm long, about as long as limb; trinervation arising slightly above base of blade, intramarginal in basal acumination.22. *A. helenae*
51. Leaf blades 1/2-3/4 as wide as long, secondary veins of trinervation diverging from midvein at 15-25° angle; heads 5-9 mm long.
53. Petioles 3-7 cm long; leaf blades distinctly and narrowly acuminate at base; peduncles 2-5 mm long.14. *A. carmonis*
53. Petioles 1.5-3.0 cm long; leaf blades acute to subtruncate at base; peduncles 3-12 mm long.

54. Base of leaf blade subacute to acute, broadest near 1/3-2/5; involucre bracts with pale or sordid hairs or nearly glabrous. 13. *A. capillipes*
54. Base of leaf blade subtruncate, broadest near basal 1/4; involucre bracts with reddish hairs.
55. Heads 8-9 mm long; leaf margins with 10-15 small serrations; stems mostly 3-4 mm thick. 21. *A. guatemalensis*
55. Heads ca. 6 mm long; leaf margins with 5-10 sometimes coarse serrations; stems slender, mostly ca. 2 mm thick. 18. *A. costaricensis*

The previously described and combined Mesoamerican species of *Ageratina* with their authorities are as follows:

Ageratina adenophora (Spreng.) King & H. Robins. (including *Eupatorium glandulosum* H.B.K.), *A. allenii* (Standl.) King & H. Robins. (including *A. whitei* King & H. Robins.), *A. anchistea* (Grashoff & Beaman) King & H. Robins., *A. anisochroma* (Klatt) King & H. Robins. (including *Eupatorium durandii* Klatt, *E. adpersum* Klatt, and *E. polyanthum* Klatt), *A. atrocordata* (B.L. Robins.) King & H. Robins. (including *A. fosbergii* King & H. Robins.), *A. austin-smithii* King & H. Robins., *A. badia* (Klatt) King & H. Robins., *A. barbensis* King & H. Robins., *A. bellidifolia* (Benth.) King & H. Robins., *A. burgeri* King & H. Robins., *A. caeciliae* (B.L. Robins.) King & H. Robins. (including *Eupatorium vetularum* Standl. & Steyerf.), *A. carmonis* (Standl. & Steyerf.) King & H. Robins., *A. cartagoensis* King & H. Robins., *A. chiriquensis* (B.L. Robins.) King & H. Robins., *A. contigua* King & H. Robins., *A. costaricensis* King & H. Robins., *A. croatii* King & H. Robins. (including *A. almedae* King & H. Robins.), *A. diversipila* King & H. Robins., *A. helenae* King & H. Robins., *A. intibucensis* King & H. Robins., *A. ixocladon* (Benth. in Ørsted) King & H. Robins., *A. kupperi* (Suesseng.) King & H. Robins., *A. ligustrina* (DC.) King & H. Robins., *A. mairetiana* (DC.) King & H. Robins., *A. malacolepis* (B.L. Robins.) King & H. Robins., *A. molinae* King & H. Robins., *A. muelleri* (Schultz-Bip. ex Klatt) King & H. Robins., *A. ovilla* (Standl. & Steyerf.) King & H. Robins., *A. pazcuarensis* (H.B.K.) King & H. Robins., *A. petolaris* (DC.) King & H. Robins., *A. pichinchensis* (H.B.K.) King & H. Robins. var. *bustamenta* (DC.) King & H. Robins. (including *Eupatorium aschenbornianum* Schauer, *E. vulcanicum* Benth. in Ørsted, and *E. donnell-smithii* Coult.), *A. pringlei* (B.L. Robins. & Greenm.) King & H. Robins., *A. prunellaefolia* (H.B.K.) King & H. Robins., *A. reticulifera*

(Standl. & L.O. Williams) King & H. Robins., *A. rivalis* (Greenm.) King & H. Robins. (including *Eupatorium skutchii* B.L. Robins.), *A. salvadorensis* King & H. Robins., *A. schaffneri* (Schultz-Bip. ex B.L. Robins.) King & H. Robins., *A. standleyi* King & H. Robins., *A. subcordata* (Benth. in Orsted) King & H. Robins., *A. subglabra* King & H. Robins., *A. subinclusa* (Klatt) King & H. Robins. (including *Eupatorium subpenninervium* Schultz-Bip. ex Klatt, *E. melanolepis* Schultz-Bip. ex Klatt, and *E. monticola* L.O. Williams), *A. tomentella* (Schrad.) King & H. Robins., *A. tonduzii* (Klatt) King & H. Robins., *A. vernalis* (Vatke & Kurtz) King & H. Robins. (including *Eupatorium chiapense* B.L. Robins.), *A. zunilana* (Standl. & Steyererm.) King & H. Robins.

LITERATURE CITED

- King, R.M. & H. Robinson. 1972. Studies in the Eupatorieae (Asteraceae). LXXXV. Additions to the genus *Ageratina* with a key to the Costa Rican species. *Phytologia* 24:79-104.
- . 1987. The genera of the Eupatorieae (Asteraceae). Monographs in Systematic Botany, Missouri Bot. Gard. 22:i-x, 1-581.